

NASA KENNEDY SPACE CENTER: CONTRIBUTIONS TO SEA TURTLE SCIENCE AND CONSERVATION

AUTHORS:

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SESSION: Linking Space Technology and Sea Turtles

Equipment needed. Computer projector with MS Power Point, access to YouTube.

The National Aeronautics and Space Administration (NASA) is a United States (US) federal agency that oversees US space exploration and aeronautical research. NASA's primary launch site, Kennedy Space Center (KSC) is located along the east coast of Florida, on Cape Canaveral and the western Atlantic Ocean. The natural environment within KSC's large land boundaries, not only functions as an extensive safety buffer-area, it performs simultaneously as a wildlife refuge and a national seashore.

In the early 1960s, NASA was developing KSC for rocket launches and the US was establishing an awareness of, and commitment to protecting the environment. The US began creating regulations that required the consideration of the environment when taking action on federal land or with federal funds. The timing of the US Endangered Species Act (1973), the US National Environmental Policy Act (1972), coincided with the planning and implementation of the US Space Shuttle Program. This resulted in the first efforts to evaluate the impacts of space launch operation operations on waterways, air quality, habitats, and wildlife.

The first KSC fauna and flora baseline studies were predominantly performed by University of Central Florida (then Florida Technological University). Numerous species of relative importance were observed and sea turtles were receiving regulatory review and protection as surveys by Dr. L Ehrhart (UCF) from 1973-1978 described turtles nesting along the KSC beaches and foraging in the KSC lagoon systems. These data were used in the first NASA Environmental Impact Statement for the Space Transportation System (shuttle program) in 1980.

In 1981, work by Dr. Archie Carr, University of Florida (UF), Dr. Ehrhart at KSC, Ross Witham for the state of Florida, and Fred Berry for the US National Oceanic and Atmospheric Administration, created a wave of interest and concern in these threatened and endangered species. In 1981, in Jacksonville Florida, the Florida Department of Natural Resources organized the first "sea turtle workshop" which ultimately gave rise to the International Sea Turtle Symposium.

In 1982, NASA began a long term ecological monitoring program with contracted scientists on site. This included efforts to track sea turtle status and trends at KSC and maintain protective measures for these species. Many studies and collaborations have occurred on KSC over these last 45 years with agencies (USFWS, NOAA, NAVY), students, and universities (UCF, University of Toronto, Texas A&M, UF). This presentation will review the various studies and collaborations on sea turtles at KSC that include: nest distributions and success, stranding network development, aerial survey testing for nest counts, predator control assessments, the earliest baseline blood chemistry health determinations on nesting females, stress hormones in nesting females, multi-year study of hatchling sex ratios, genetics, species composition, abundance and distribution of in-water juveniles, turtle cold stun response, exterior lighting impacts and control, and satellite tag tracking of post-nesting turtles in the vicinity of near shore shoals and sand mining sites.

Through these studies, monitoring, and recommendations, KSC has provided excellent stewardship and protection of the local environment. While conducting its space program mission, KSC has also made significant contributions of information for agencies charged with the conservation and management of these species.